

# Principles of Pest Management

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# A Pest is Anything That....

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- Competes with humans, dom. animals, or plants for food or water
- Injures humans, animals, plants, structures or possessions
- Spreads disease to humans, dom. animals, wildlife or desirable plants
- Annoys humans or domestic animals

# Types of Pests

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- Insects-roaches, termites, mosquitoes, aphids, beetles, caterpillars
- Insect-like organisms-mites, ticks, spiders
- Microbial organisms-bacteria, fungi, nematodes, viruses, mycoplasmas
- Weeds
- Vertebrates-rats, mice, birds, rodents, fish, snakes
- Mollusks-snails, slugs, and shipworms



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# Pink Snow Mold



- Major problem in late fall and early spring
- Snow cover not needed
- Irregular patches with light pink margins

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# Mallow

- Annual or perennial
- Lobed, rounded leaves with white to lavender flowers
- Spreads by seed
- Cultural control: regular mowing
- Herbicide control: 2,4-D + MCPP + Dicamba or 2,4-D + MCPP + Dicamba + MSMA



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# Pest Control Goals

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- **Prevention-keeping the pest from becoming a problem**
- **Suppression-Reducing pest numbers or damage to an acceptable level**
- **Eradication-destroying an entire pest population**

# Pest Identification

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- Physical features of the pests
- Characteristics of damage caused
- Development and biology
- Continuous, sporadic, or potential?
- What is the control goal?

# Sod Webworms

- **Moths**
  - Grayish-white to brown
  - 1 inch or less long
  - **Snout-like projection from front of head**
  - Wings fold around body at rest
  - Zig-zag flight pattern
- **Caterpillar**
  - Dark heads
  - Gray to light green, beige or brown
  - **Dark spots over body**
  - 1/5 - 1 inch long
  - Curl up when disturbed
  - Silk-lined tunnels in thatch



**Dave Shetlar, OSU**



**Dave Shetlar, OSU**



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# Pest Identification

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- Physical features of the pests
- Characteristics of damage caused
- Development and biology
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# Sod Webworms

- **Damage**
  - Larvae chew on leaves and stems at night or on cloudy days
  - Cut off grass blades and drag into tunnels
  - Small, irregular brown patches of closely cropped grass
  - Damage from birds looking for larvae
  - Green frass in thatch



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# Pest Identification

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- Physical features of the pests
- Characteristics of damage caused
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# Sod Webworms

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- **Life Cycle**
  - Overwinter as caterpillars
  - Pupate in early spring
  - Adults emerge in early summer and lay eggs at night
  - Larvae in 1 week to 10 days
  - 1 to 3 generations between May and Sept.
  - Overwinter in silken webs in thatch

# Threshold Levels

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- Level of pest populations at which you should take pest control action
- Aesthetic, health or economic considerations
- “Action” and “economic” thresholds

# Sod Webworms

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- Control
  - Insecticide threshold: 10-15 larvae / yd<sup>2</sup>
    - Acephate, Chlorpyrifos, Conserve, Dursban, Mach 2, Sevin, Talstar, Tempo
  - Nematodes
    - *Steinernema carpocapsae* (Scanmask™)
  - Bacterial Spores
    - *Bacillus thuringiensis* (Bt)

# Pest Monitoring

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- Insect, insect-like, mollusk and vertebrate pests may be trapped or scouted
- Weeds are monitored by visual inspection
- Microbial pests are monitored by looking for the injury or damage caused

# Sod Webworms

- “Hands and knees” method
  - Chewed blades, small, green fecal pellets, silk-lined burrows
- Focus area between healthy and damaged grass



# the Soap Soak

- 1 oz. or 2 tbs lemon-scented, liquid dish soap in 2 gal water
- OR-
- 2 tbs commercial insecticide containing 1-2% pyrethrins in 2 gal water
- Pour or sprinkle over 1 yd<sup>2</sup>, best in late afternoon or evening
- Water afterward to minimize risk of sun scald or phytotoxicity
- Effective for:
  - Cutworm, Sod webworm, adult billbugs, Armyworm, Others

# Integrated Pest Management

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- Identify the pest. Is control needed?
- Determine control goals
- Know what control tactics are available
- Evaluate the risks and benefits of each tactic or combination of tactics
- Choose an effective strategy that will cause the least harm
- Use each tactic correctly
- Observe local, State, and Federal regulations

# Natural Controls

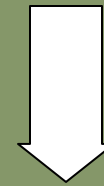
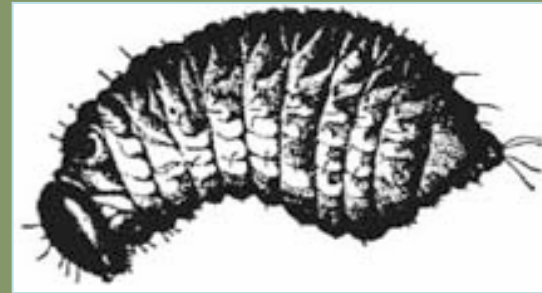
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- Natural controls are normally in place, may help or hinder
  - Climate
  - Natural enemies
  - Geographic barriers
  - Food and water supply
  - Shelter

# Applied Controls

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- To be used when natural controls do not work quickly or completely enough
  - Host resistance
  - Biological control
  - Cultural control
  - Mechanical/physical control
  - Sanitation
  - Chemical control



# Bluegrass Billbug

- Control adults before egg-lay or as larvae once in soil
  - Insecticide threshold: 9/yd<sup>2</sup>
    - Mach 2, Merit, Talstar, Sevin, Chlorpyrifos, Tempo
  - Resistant turfgrass varieties
    - Perennial ryegrass and fescues with endophytes
    - Bluegrass-Park, Arista, NuDwarf, Delta, Kenblue
  - Nematodes
    - *Steinernema carpocapsae* (Scanmask™)
    - *Heterorhabditis bacteriophora* (Cruiser™)
  - Fungus
    - *Beauveria bassiana* (Naturalis-T)

# Applied Controls

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- To be used when natural controls do not work quickly or completely enough
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  - Biological control
  - Cultural control
  - Mechanical/physical control
  - Sanitation
  - Chemical control

# Dandelion

- Perennial
- Deeply-lobed leaves, yellow flowers, leaves and stems have milky fluid
- Spread by seed and stems from root
- Cultural control: physical
- Herbicide control: 2,4-D + MCPP + Dicamba or 2,4-D + MCPP + Dicamba + MSMA or Triclopyr + Clopyralid



# Applied Controls

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- To be used when natural controls do not work quickly or completely enough
  - Host resistance
  - Biological control
  - Cultural control
  - Mechanical/physical control
  - Sanitation
  - Chemical control

# Necrotic Ring Spot



- Can be a spring and fall problem
- Dead circles or arcs of various size
- Dark hyphae can be found on grass crowns
- Hard to control even with fungicides

# Questions?

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